

THE WEAPON FOCUS EFFECT ON MEMORY FOR BLACK VERSUS WHITE
PERPETRATORS

A THESIS

SUBMITTED TO THE GRADUATE SCHOOL
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE

MASTER OF ARTS

BY

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MUNCIE, INDIANA

MAY 2016

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ABSTRACT**THESIS:** The Weapon Focus Effect on Memory for Black versus White Perpetrators**STUDENT:** Danielle Sneyd**DEGREE:** Master of Arts**COLLEGE:** Sciences and Humanities**DATE:** May 2016**PAGES:** 42

This research examined the effects of weapon focus on memory for Black versus White perpetrators. Male and female participants watched one of six videos depicting a robbery. The videos differed with respect to the object being held (weapon versus neutral object) and the perpetrator's appearance (White man in neutral attire, Black man in neutral attire, and Black man in stereotypical/hip-hop attire). After watching the video, the participants described the perpetrator's features and attire by filling out a questionnaire that contained both multiple choice and free recall items. In addition, the participants viewed a target-present lineup and attempted to identify the perpetrator. The standard weapon focus was found. In addition, for correct and incorrect details, significant interactions between the object and the perpetrator's appearance revealed a larger difference between the object conditions for the White perpetrator than for the Black perpetrator in neutral attire. Furthermore, in the condition in which the Black perpetrator wore stereotypical/hip-hop attire, there was no difference between the object conditions, meaning that the weapon focus effect disappeared. The results supported my hypothesis that, because Black men are stereotypically associated with crime and weapons (Devine & Elliot, 1995) participants would find it less unusual for the Black perpetrator to be holding a weapon than for the White perpetrator to hold one. The results also supported the hypothesis that the

weapon focus effect would be even weaker when the Black perpetrator is wearing clothing that is highly stereotypical for young Black men as opposed to neutral clothing.

The Weapon Focus Effect on Memory for Black versus White Perpetrators

Imagine you are leaving work late one night, and as you go to unlock your car door someone sneaks up behind you and tells you to hand over your wallet. At first you think “he has to be kidding” and you prepare to tell him to get lost, but as you turn around you realize a gun is pointed at your face. You turn over the wallet, and the perpetrator runs away. As soon as the perpetrator runs away you immediately call the police.

Although the victim may not realize it, she will probably have a harder time remembering accurate details about the perpetrator than if there was no weapon present in the crime she just witnessed (Pickel, 2009). The event took place only a few minutes ago and the perpetrator was standing right in front of her, so how could she not remember? The reason this memory problem occurs is the weapon focus effect. If a weapon is present during the commission of a crime, witnesses less accurately remember specific details about the person holding the weapon because some of their attention is diverted from the perpetrator to the weapon, leaving fewer cognitive resources to encode and recall details about the perpetrator. In general, observers have a tendency to pay more attention to a weapon than to neutral and surrounding objects, including the person holding the weapon (Biggs, Brockmole, & Witt, 2013). I developed the current study to help understand how stereotypes and race play a role in the weapon focus effect.

Foundational Findings

The weapon focus effect has serious implications for the criminal justice and law fields. Eyewitness testimony is one of the main sources of evidence that can lead to conviction in most criminal cases (Fawcett, Russell, Peace, & Christie, 2013). Due to the weapon focus effect, the accuracy of eyewitness memory can decrease; consequently, testimony from victims and witnesses needs to be reviewed more carefully (Fawcett et al., 2013). The basic concept here is

that witnesses focus some of their attention on the weapon. Because they are using some of their cognitive resources to do so, they have a harder time remembering the features of the person holding the weapon, such as facial features, attire, and general appearance descriptors.

Across all weapon focus studies, the main conclusion that can be drawn is that when a weapon is present eyewitnesses will recall fewer accurate details about surrounding stimuli than if there was no weapon present (Fawcett et al., 2013). Although many studies used a gun as the chosen weapon, similar results have been found using other objects, such as a bloody letter opener (Johnson & Scott, 1976) or a needle (Maass & Kohnken, 1989). Loftus, Loftus, and Messo (1987) demonstrated that the effect occurs because eyewitnesses spend more time looking at a weapon than at neutral objects. The participants viewed one of two series of 35-mm slides depicting a target person moving through an ordering line at a local fast food restaurant. In the control condition he pays for his meal with a check, and the cashier hands back some money in change. In the experimental condition he pulls a gun on the cashier, and the cashier hands him some money. The slides were identical except for the weapon's presence. While the participants watched these slides, a corneal reflection device was used to track their eye movements. Afterward, they filled out a questionnaire regarding the appearance of the target and then attempted to identify him in a 12-person photo line-up. The results indicated that participants tended to fixate on the weapon more often and for a longer period of time than they did on the check. In addition, participants who witnessed the weapon less accurately remembered details about the target in one of two experiments, and the ability to identify the target was impaired by the weapon in both experiments. The results from the photo line-up data suggest that those in the control condition were significantly more likely to select the target from the line-up than those in

the weapon condition. However, there were no differences in how confident both groups rated themselves.

In most criminal cases, the next step after eyewitnesses give their description is for them to try to identify the perpetrator in a line-up, which may include the perpetrator (target-present) or not (target-absent). For this reason, and to promote ecological validity, some researchers have tried to determine whether the weapon's presence affects line-up selections as well as the ability to describe the perpetrator. In some studies the results for the line-up were similar to those for feature accuracy such that, when a weapon was present, eyewitnesses performed less accurately than if a neutral object was present (e.g., Cutler & Penrod, 1988; Loftus et al., 1987). Fawcett et al. (2013) reviewed research regarding line-ups and concluded that when a weapon is visible there is a diminished accuracy in eyewitness identification. However, the effect sizes for the two dependent measures are different. In their meta-analysis, Fawcett et al. reported a relatively large effect for feature accuracy ($g = 0.75$, $CI(95\%) = [0.60, 0.89]$), whereas for line-up identifications of only a small to moderate effect was found ($g = 0.22$, $CI(95\%) = [0.13, 0.32]$).

Theoretical Background

There are two competing theories of why weapon focus occurs; the first is based on the weapon's unusualness in the setting in which it appears, and the other is based on the weapon's threatening qualities. The original hypothesis of why the weapon focus effect occurs was that the threatening nature of a weapon produces a feeling of anxiety in witnesses, increasing their physiological arousal and thus narrowing their attentional focus. As a result, witnesses pay attention to the source of the threat but cannot easily attend to other stimuli simultaneously, such as the attire of the person holding the gun. A few studies have supported this explanation.

For example, Peters (1988) recorded the arousal level of eyewitnesses by measuring pulse

rate as they viewed a live event. Peters tested adult patients receiving an injection to prevent measles. Although a hypodermic syringe is not a prototypical weapon, it does cause patients to feel pain. Therefore, some researchers have considered it analogous to a weapon and have argued that it is meaningful to measure memory performance in witnesses who are threatened with an injection. After filling out the proper paperwork, the participants had their pulse rates taken. A few seconds later, a nurse came in and gave them an injection. Approximately one minute afterward, the participants met with a female researcher who made a follow up appointment that was either 24 hours or one week later, and their pulse rate was measured again. When participants returned for the follow up, the weapon focus effect was measured by having the participants recall in a questionnaire the appearance of the nurse who injected the shot and the researcher who had helped them schedule the appointment. They also tried to identify both individuals in either a target-present or target-absent line-up. Peters found that, for both retention intervals, participants recalled the nurse less accurately than the researcher and were less likely to identify her in the target-present line-up. In addition, the participants' pulse rates were significantly higher during their interaction with the nurse than with the researcher. These results support the threat hypothesis because they suggest that the threatening aspect of the weapon increases witnesses' stress levels and reduces their attentional resources, leading them to focus on the source of the stress (the weapon) at the expense of other information about the event, such as the appearance of the person holding the weapon.

Another experiment, conducted by Davies, Smith, and Blincoe (2008), looked at the effect of a threatening object on children's ability to recall information about a target individual. The children, who ranged in age from 7 to 9 years, played a memory game using common objects. They were given 40 seconds to look at several objects on a table, and then they tried to

recall aloud all the objects they could remember seeing. After a delay of 3 hours, the children completed a questionnaire asking them to remember the appearance of the experimenter. The children who viewed a set of items that included a threatening object (a syringe filled with red liquid) less accurately remembered the experimenter's appearance compared to those who saw only non-threatening objects. This result, like Peters' (1988), suggests that the threat associated with a weapon causes witnesses to pay attention to it, leaving fewer cognitive resources for encoding other aspects of the event, such as the perpetrator's appearance.

On the other hand, the threat hypothesis does not fully explain the weapon focus effect because unusual but nonthreatening objects can sometimes produce the same effect as a weapon. Moreover, some studies have manipulated the level of threat in the perpetrator's behavior but obtained no effect (e.g., Pickel, 1998, 1999). Finally, although Fawcett et al.'s (2013) meta-analysis revealed an effect of threat in the predicted direction, the difference was not significant.

Findings with inconsistencies, such as those listed above, led to the development of the unusualness hypothesis, which postulates that the reason weapon focus occurs is because weapons are unusual in everyday situations and therefore are schema incongruent, and observers attend to unexpected objects (Fawcett et al., 2013). Because our schematic representations of everyday life do not usually include weapons, when one is introduced it catches and holds attention. For example, Pickel (1999) created different versions of a video depicting a man with a gun interacting with a woman at a baseball field or a shooting range. The participants who watched the baseball scenario remembered the man less accurately compared to those who watched the shooting range scenario. Pickel reasoned that, because people expect to see a gun at a shooting range, eyewitnesses in this condition had less trouble taking their eyes off the weapon and focusing on the perpetrator holding the weapon. On the baseball field, the weapon was more

schema-incongruent and unexpected, and eyewitnesses were more likely to focus on the weapon than on the person holding it. In further support of the unusualness explanation, Fawcett et al.'s (2013) meta-analysis concluded that an unusual object can have the same effects on memory as a weapon.

The unusualness explanation leads to the prediction that the gender of the perpetrator should interact with the weapon focus effect. A common social stereotype is that women are less violent and aggressive than men. Therefore, witnesses should consider it more unusual to see a woman holding a weapon than a man holding one, and they should focus even more strongly on a weapon when it appears in the hands of a female perpetrator. To test this hypothesis, Pickel (2009) asked participants to watch a 1.5 minute video of a perpetrator who robs a male and female victim. The perpetrator is either male or female in different conditions and holds either a handgun or a neutral object (a compact disc). After watching the video, the participants attempted to remember the perpetrator's appearance. The results supported the hypotheses; specifically, the difference in memory performance between the gun and compact disc conditions was greater when the perpetrator was a woman rather than a man. Pickel also asked participants if the perpetrator was holding something, and, if so, to name the object and rate how unusual it was. The weapon was rated as more unusual when it was carried by the woman rather than by the man. In addition, when asked to rate how threatening the conditions were, there was no difference between the male perpetrator and the female perpetrator. This study provides evidence supporting the unusualness explanation for the weapon focus effect and illustrates the role that stereotypes can play in creating perceptions of the unusualness of a weapon.

Stereotypes

In addition to using gender stereotypes, witnesses may interpret crime events differently

depending on the race of the perpetrator. Within our culture, Black men are stereotypically linked to dangerousness, criminal behavior, and violence. For example, Devine and Elliot (1995) reported that most of the White respondents they surveyed agreed that the cultural stereotype of Black individuals includes the traits “criminal,” “aggressive,” and “hostile.”

To examine how stereotypes can influence judgments, Payne (2001) conducted a study in which participants were primed by either a Black or a White male face for 200ms and then were asked to decide quickly whether an object displayed on a computer screen was a gun or a tool, such as a wrench. Payne found that the participants, most of whom were White, were faster at identifying guns when they were primed by a Black face than when they were primed by a White face. In addition, the participants were more likely to misidentify a tool as a gun after being primed with a Black rather than a White face. These results suggest that there is some amount of automaticity within the process of associating Black men with weapons.

Correll, Park, Judd, and Wittenbrink (2002) conducted a similar study using videogame technology. The participants viewed photos of Black and White men holding a neutral object (a silver-colored aluminum can, a silver camera, a black cell phone, or a black wallet) or a weapon (a silver snub-nosed revolver or a black 9-mm pistol). The perpetrators were shown in different positions and in different locations in the photographs. The participants’ task was to “shoot” at armed targets by pushing a particular button and decide not to shoot at unarmed targets by pushing a different button. Both decision accuracy and reaction time were measured. The results were that participants fired faster at an armed perpetrator if he was Black than if he was White, and they more quickly decided to not shoot an unarmed White target than an unarmed Black target. In addition, the participants more often shot at unarmed Black than White targets.

Correll et al. suggested that their findings could help explain some police shootings of unarmed Black suspects.

A possible limitation of this research is that the participants were college students and therefore not representative of law-enforcement professionals who go through rigorous firearms training. Therefore, Plant and Peruche (2005) replicated the study using certified law-enforcement professionals. Similar results were found with these law-enforcement professionals as with the participants in Correll et al.'s (2002) study; however, with practice the participants were able to change their behavior so that the response bias disappeared.

It is important to note that the participants' tendency to associate Black men with guns appears to be an automatic process that is not driven by explicit prejudice. The effects in these studies above seem to be due to the activation of a stereotype that participants were aware of, which then prompted them to think about related concepts. It appears that it is not necessary for them to endorse the stereotype, just to have knowledge of it. For example, Correll et al. (2002) reported that the reaction time bias they observed was correlated with participants' awareness of the racial stereotype linking Black men with violence but was independent of their personal belief in that stereotype.

A recent meta-analysis conducted by Mekawi and Bresin (2015) explored evidence for racial bias in shooting task studies. The researchers examined 42 different studies ($N = 3427$) and concluded that there is a significant effect of target race on reaction time and shooting threshold such that, when compared with White targets, participants are quicker to shoot armed Black targets, slower to not shoot unarmed Black targets, and more likely to have a liberal shooting threshold for Black targets. However, there was no significance for higher false alarm rates for Black versus White targets (shooting an unarmed target). The reason that reaction time

may be faster for shooting at an armed Black (versus White) target is because a Black man holding a weapon fits with the racial stereotypes that were mentioned previously. Mekawi and Bresin (2015) found a correlation between shooter bias and endorsement of stereotypes, but the relationship was small, indicating that other factors may be at play.

Additional research has shown that target individuals who seem more prototypically Black are more likely to be associated with crime. Eberhardt, Goff, Purdie, & Davies (2004) asked police officers to view photos of 40 Black or 40 White male faces. Some were asked to rate how stereotypically Black or White each face looked by using physical features that most people would associate with Blacks or Whites. Other participants were told that some of the photos might depict criminals, and they judged whether each target looked like a criminal or not. The officers classified more Black than White faces as criminals. In addition, Black faces rated high in stereotypicality were more often judged as criminal than Black faces who were rated low in stereotypicality. The results raise the possibility that individuals whose physical features or clothes more closely resemble the stereotypical appearance of Black men are more likely to be considered violent or criminal. Eberhardt et al. (2004) also noted that the mere thought or image of a Black man can activate stereotypes that can then influence an array of phenomena. For example, observers may conclude that a Black man is violent and a criminal, and they may evaluate ambiguous behaviors as aggressive or miscategorize harmless objects as weapons.

Current Study

The current study adds to the literature testing the unusualness hypothesis by examining how racial stereotypes interact with the weapon focus effect to influence eyewitness recall. From the research on stereotypes it is clear that there is a bias against Black men and that many negative connotations, such as dangerousness, violence, and aggression, are strongly associated

with the Black male stereotype. The main purpose of my study was to investigate whether the perpetrator's race would affect the strength of the weapon focus effect. The participants watched a video that depicted either a Black or a White male perpetrator who robbed a victim while holding either a weapon or a neutral object. After watching the video participants were asked to remember the perpetrators' appearance and attire and then to identify him in a target-present line-up.

I developed three hypotheses. First, I expected to replicate the standard weapon focus effect such that participants would remember less accurate information about the perpetrator in the weapon present condition than in the weapon absent condition, regardless of race. Second, because Black men are stereotypically associated with crime and weapons (Devine & Elliot, 1995), participants should find it less unusual for the Black perpetrator to be holding a weapon than for the White perpetrator to hold one; therefore, the weapon focus effect should be weaker (or perhaps nonexistent) when the perpetrator is a Black rather than a White man. Finally, I predicted that the weapon focus effect would be even weaker when the Black perpetrator is wearing clothing that is highly stereotypical for young Black men as opposed to neutral clothing. Eberhardt et al. (2004) reported that Black faces rated higher in stereotypicality were more likely to be judged as criminals than those that were rated as lower in stereotypicality. Similarly, a Black perpetrator dressed in a more stereotypically Black manner rather than in neutral clothing should be more strongly associated with criminality and weapons, which in turn should lead to a weaker weapon focus effect.

Method

Design

This experiment used a 2 X 3 between-subjects factorial design. The independent

variables were the object held (weapon versus neutral object) and the perpetrator's appearance (White/neutral attire versus Black/neutral attire versus Black/stereotypical hip-hop attire). The primary dependent variables were participants' memory of the perpetrator's physical features and clothing and their ability to identify him in a target present photo line-up on a computer.

Participants

One hundred ninety-six participants (137 women) recruited from the introductory psychology subject pool at Ball State University participated in this study. Participants' ages ranged from 18-32 years, with a mean age of 19.6. I chose to use White participants only for my sample to avoid any noise that could be added to the data by cross-race effects (e.g., Tullis, Benjamin, & Lui, 2014). In addition, I did not want to assume that Black participants would be affected the same way by the stereotype about Black men as their White counterparts. In exchange for their participation, students received course credit.

Materials

Experimental manipulations. The participants watched a video depicting a robbery. In all versions of the video, the victim, who is never seen because the video is filmed from a first person perspective, walks toward the back of a parked car to place some items in the trunk. The perpetrator approaches on foot (either with a switchblade knife or a water bottle) and demands that the victim hand over his or her wallet. I manipulated the race of the perpetrator, such that he was either White or Black in different versions. I additionally manipulated the attire of the perpetrator. The White perpetrator wore neutral clothing, whereas the Black perpetrator wore neutral clothing in one condition and attire that is stereotypical of young Black men in another. Neutral clothing for each perpetrator was defined as khakis and casual T-shirt (this look can be found on most college campuses). Stereotypical/hip-hop attire was defined as an oversized

sports jersey with baggy pants, a flat brim baseball hat, a gold chain, and athletic shoes (<https://stuffblackpeopledig.wordpress.com>).

Dependent measures. The questionnaire (see Appendix) included both open-ended and multiple choice items that asked participants to remember the perpetrator's physical appearance and attire. The participants also rated how threatening the perpetrator was. This question allowed me to determine whether the participants' memory performance is related to the perceived level of threat. Ideally, the Black and the White perpetrator should be rated similarly. In addition, the participants were asked about their knowledge of racial stereotypes and their endorsement of them. These questions were used to confirm that participants are aware of the stereotypes and to determine whether their belief in them affects the race-weapon interaction. Lastly, demographic items were asked.

To quantify a participant's memory for the perpetrator, two judges studied the videos and created an answer key that specified the correct responses for each memory item on the questionnaire. Using the answer key, two coders who were blind to the study's hypotheses scored the questionnaires. The primary coder scored all the questionnaires, and the secondary coder evaluated a subset of them so that I could calculate interrater reliability. The questionnaires were coded by counting the number of correct and incorrect details for each participant. An example of a correct detail would be if the perpetrator had white sneakers on and the participant reported "sneakers." Additionally reporting that they were "white" would have been a second correct detail. An incorrect detail would be if the participant said the sneakers were "black." Each questionnaire has two different scores (correct and incorrect details) that were analyzed separately.

Participants also looked at a 6-person target present line-up on a laptop computer. To design the line-up, I used the guidelines constructed by Malpass, Tredoux and McQuiston-Surrett (2007). These guidelines suggested that (a) the fillers in the line-up should resemble the actual perpetrator but should not be so similar that they are clones, (b) one filler should not stick out from the rest of the fillers on any one attribute, (c) besides the perpetrator there should be an additional five fillers to choose from, and (d) the order of the photos should be randomized for each witness. Before selecting a photo, each witness was told that the robber might not be in the line-up, in which case he or she could respond with the answer that the perpetrator was not present. Once a selection or rejection of the line-up was made, all witnesses rated how confident they were in their decision on a 7-point scale, with higher scores indicating more confidence.

Procedure

Participants were tested individually or in groups no larger than 10. The experimenter gave each participant an informed consent form to read and sign. After obtaining informed consent, participants watched the robbery video on a TV and completed the questionnaire. Next, the participants viewed the line-up individually after moving to the back of the testing room out of the sight of the other participants. The experimenter showed participants the line-up on a laptop computer and gave them instructions. The participants recorded their responses on a form; specifically, they circled the number corresponding to the photo they believed depicted the perpetrator or indicated that he was not pictured, and they rated their confidence in their choice. Before leaving, all participants were given a copy of the informed consent form for their own records and were debriefed. All participants were treated in accordance with the ethical standards set forth by the American Psychological Association.

Results

Data Analysis

A 2 (object held: weapon vs. neutral object) X 3 (perpetrator's appearance: White male in neutral attire vs. Black male in neutral attire vs. Black male in stereotypical/hip-hop attire) between-participants factorial ANOVA was conducted on all measures below except line-up selection accuracy, for which a hierarchical loglinear analysis was used.

Description of Perpetrator

To calculate how accurate witnesses' memories were for the perpetrator, two judges first studied the videos and made a master answer key which specified what constituted correct responses to each memory question. One coder who was blind to the study's purpose coded all the questionnaires individually for the number of correct details and the number of incorrect details. Then a second coder scored 40 questionnaires so that interrater reliability could be calculated. Interrater reliability was high between the two coders, with $r = .94$ for correct details and $r = .96$ for incorrect details.

Correct details. A main effect was found for object held, indicating the standard weapon focus effect was found and that more correct details were reported in the neutral object condition than in the weapon condition (see Table 1), $F(1, 190) = 12.80, p < .001$. There was also a main effect of perpetrator's appearance, revealing that participants were able to recall the most number of correct details for the Black perpetrator in stereotypical/hip-hop attire and the least number of correct details for the Black perpetrator in neutral attire, $F(1, 190) = 12.06, p < .001$.

A significant two-way interaction between object held and perpetrator's appearance on correct details was found $F(1, 190) = 5.95, p = .003$. Simple effects analyses revealed that, for the condition with the White perpetrator, more correct details were remembered when the

perpetrator was carrying a neutral object than when he was carrying a weapon, $F(1, 190) = 21.64, p < .001$. For the condition with the Black perpetrator wearing neutral attire, more correct details were recalled when the perpetrator was holding a neutral object than a weapon, but the effect was smaller than with the White perpetrator $F(1, 190) = 4.07, p = .05$. Lastly, for the condition with the Black perpetrator in stereotypical/hip-hop attire there was no significant difference between object conditions, $F(1, 190) = .115, p > .05$.

Incorrect details. A main effect of object held revealed that the standard weapon focus effect was once again found, such that participants reported more incorrect details in the weapon condition than in the neutral object condition (see Table 1), $F(1, 190) = 14.92, p < .001$. There was no significant main effect of perpetrator's appearance on incorrect details, $F(1, 190) = 2.43, p = .09$.

A significant interaction was found between object held and perpetrator's appearance on incorrect details, $F(1, 190) = 7.57, p = .001$. Simple effects analyses revealed that the difference between the object conditions was greater in the White perpetrator condition, $F(1, 190) = 26.04, p = .001$, than in the Black perpetrator in neutral attire condition, $F(1, 190) = 5.11, p = .05$. However, when the perpetrator was the Black male dressed in stereotypical/hip-hop attire, the object held had no effect on the number of incorrect details recalled, $F(1, 190) = .27, p > .05$.

Confidence rating. Participants were asked to rate on an 11-point Likert scale how confident they were in the accuracy of the description they provided of the perpetrator. There was no significant main effect of object held, $F(1, 190) = .113, p = .74$ or perpetrator's appearance, $F(1, 190) = .87, p = .42$, on confidence found. There was also no significant interaction found, $F(1, 190) = .96, p = .39$.

Threat rating. Participants were asked to rate the extent to which the perpetrator seemed threatening. There was a significant main effect of object held, such that when the perpetrator was holding a weapon participants found him more threatening than when he was holding a neutral object, $F(1, 190) = 254.38, p < .001$. There was no main effect of perpetrator's appearance, $F(1, 190) = .09, p = .92$. There was no significant interaction between object held and perpetrator's appearance on threat rating, $F(1, 190) = .46, p = .64$.

Knowledge and Beliefs

Knowledge of stereotype. Participants were asked, "According to racial stereotypes that exist in our society, who is more likely to commit a crime using a weapon: a White man or a Black man?" Participants rated this question on an 11-point Likert Scale (numbers above the midpoint indicate that participants think the stereotype is that a Black man is more likely to commit a crime with a weapon). There were no significant results (see Table 1; $ps \geq .29$). However, the overall mean ($M = 9.19, SD = 1.43$) revealed that participants were aware that there is a stereotype linking Black men and crimes involving weapons.

Personal beliefs. Participants were also asked "According to your personal beliefs, who is more likely to commit a crime using a weapon: a White man or a Black man?" Participants rated this on an 11-point Likert scale (numbers above the midpoint indicate that participants believe a Black man is more likely to commit a crime with a weapon). There were no significant results (see Table 1; $ps \geq .76$). However the total mean ($M = 6.63, SD = 1.29$) revealed that participants' beliefs were mostly neutral and only slightly skewed towards the Black target. This means that most participants indicated that they do not believe Black men are particularly more likely than White men to commit a crime using a weapon.

Line-ups

Line-up selection. A hierarchical log-linear analysis was used to investigate the effects of object held and perpetrator's appearance on line-up accuracy (see Table 1). There was no significant main effect of object held on correct line-up selection, $\chi^2(2, N = 196) = 1.14, p = .29$, Cramer's $V = .08$. There was also no main effect of perpetrator's appearance, $\chi^2(2, N = 196) = 3.56, p = .17$, Cramer's $V = .14$. Lastly, there was not a significant interaction between object held and perpetrator's appearance on line-up selection accuracy, $\chi^2(2, N = 196) = .99, p = .61$, Cramer's $V = .07$. Although there were no significant results, the pattern of correct identifications resembled what was predicted, such that the largest difference between object conditions was for the White perpetrator, then for the Black perpetrator in neutral attire, and there was almost no difference at all for the Black perpetrator in stereotypical/hip-hop attire.

Line-up confidence. There was no main effect of object held, $F(1, 190) = 1.42, p = .23$, or a main effect of perpetrator's appearance, $F(1, 190) = 1.56, p = .21$, on line-up confidence (see Table 1). However, there was a significant two-way interaction between object held and perpetrator's appearance on line-up confidence, $F(1, 190) = 4.46, p = .01$. Simple effects tests revealed that the object influenced witnesses' confidence in their line-up decision only when the perpetrator was the White male, such that participants were more confident in their decision when he was holding a neutral object than when he was holding a weapon, $F(1, 190) = 9.88, p = .01$. However, in all other conditions confidence was rated the same regardless of the object the perpetrator was holding, $F(1, 190) = .002, p > .05$ for Black perpetrator in neutral attire and $F(1, 190) = .83, p > .05$ for Black perpetrator in stereotypical/hip-hop attire.

Discussion

The main purpose of this study was to investigate whether a perpetrator's race will affect

the strength of the weapon focus effect. I had three main hypotheses for this study. I first hypothesized that I would replicate the standard weapon focus effect such that participants would remember less accurate information about the perpetrator in the weapon present condition than in the weapon absent condition, regardless of race. Second, I hypothesized that because Black men are stereotypically associated with crime and weapons (Devine & Elliot, 1995) participants will find it less unusual for the Black perpetrator to be holding a weapon than for the White perpetrator to hold one; therefore, the weapon focus effect will be weaker when the perpetrator is a Black rather than White man. Third, I hypothesized that the weapon focus effect would be even weaker when the Black perpetrator is wearing clothing that is highly stereotypical for young Black men as opposed to neutral clothing.

Descriptions of Perpetrator's Appearance

I predicted that I would find the standard weapon focus effect and that participants would remember more correct details in the weapon absent condition than in the weapon present condition. This hypothesis was supported; overall, participants recalled more correct details in the neutral object condition than in the weapon condition. Furthermore, participants recalled more incorrect details in the weapon condition than in the neutral object condition. These results represent the standard weapon focus effect.

The second hypothesis predicted that the weapon focus effect would be weaker for the Black male perpetrator than for the White male perpetrator due to research linking Black men with violence and crime. This prediction can be traced back to the unusualness hypothesis that a schema-inconsistent object will naturally attract more attention than a neutral object. In this case because of the strong stereotype linking Black men to crime, witnesses may view a Black man holding a weapon as less unusual than a White man holding the same weapon. Therefore,

witnesses may less accurately remember details about the Black perpetrator than the White perpetrator. This hypothesis was also supported. For correct details and incorrect details, the significant interaction between the object and the perpetrator's attire revealed a larger difference between the object conditions for the White perpetrator than for the Black perpetrator in neutral attire.

The third hypothesis predicted that the weapon focus effect would be the weakest when the Black perpetrator is wearing clothing that is highly stereotypical for a young Black man as opposed to neutral attire. The analyses of correct and incorrect details indicate that this hypothesis was supported. For the condition in which the Black perpetrator was wearing stereotypical/hip-hop attire, there was no difference between the object conditions, meaning that the weapon focus effect disappeared. By manipulating how much the perpetrator resembled a stereotypical Black man, similar to Eberhardt et al.'s (2004) study, I was able to increase the chances of the witness activating stereotypes regarding Black men and crime. This process influenced the witnesses to view the weapon as consistent with the stereotype, instead of unusual. Because their attention was not diverted toward the weapon, the witnesses could recall a similar number of correct and incorrect details regardless of the object the perpetrator was holding, therefore eliminating the weapon focus effect in this condition.

Line-up Accuracy

Although there were no significant results for line-up accuracy, the pattern was as expected (see Table 1). Witnesses in the White perpetrator condition were more accurate when the perpetrator was holding a neutral object than a weapon. Similar results could also be seen in the condition with the Black perpetrator wearing neutral attire, except the difference was slightly smaller. Finally, for the condition with the Black perpetrator in stereotypical/hip-hop attire,

participants were equally accurate in the two object conditions. Looking back at previous literature, Fawcett et al. (2013) concluded in their meta-analysis that there does tend to be diminished accuracy in line-up selections when a weapon is present versus when a neutral object is present, but the effect size is only small to moderate (compared to a large effect size for descriptive accuracy). The reason for this difference is probably that, when witnesses describe the perpetrator, there is more variability in what they can report, which makes description accuracy a more sensitive measure. Some witnesses can report a large number of correct details regarding the perpetrator's appearance, whereas others may report a small number of correct details. However, when selecting from a line-up, the witnesses only need to choose the target that looks the most familiar, and they would have a one in six chance of selecting correctly even if they could not remember the perpetrator. For this reason, line-up accuracy is a less sensitive measure of witnesses' memory. The current results do seem to follow the pattern that would have supported my hypothesis.

Confidence in Description Details and Line-up Selection

Other important results to discuss include the nonsignificant confidence ratings regarding the accuracy of the description of the perpetrator. The participants rated their confidence the same regardless of the object held by the perpetrator or his appearance. This indicates that confidence in reports does not always match up with accuracy. This concept has been shown in numerous other studies (Bradfield, Wells, & Olson, 2002; Paiva, Berman, Cutler, Platanina, & Weipert, 2011), which have concluded that confidence and accuracy are not perfectly correlated. The reason is that people's memories are reconstructive, and although we may be confident in what we think we remember, it is not always positively related to accuracy because there can be interference from other sources. It is also important to note that witnesses can share as much or

as little as they want in response to the open-ended questionnaire items. If they were not sure about certain details, they could opt not to write down that information, which would decrease the variation in confidence ratings across conditions.

Although confidence does not perfectly predict accuracy, the correlation between the two variables is not zero, as shown by the results for line-up confidence. The object held by the perpetrator influenced participants' confidence in their line-up accuracy when the perpetrator was White; participants were more confident when the White perpetrator was holding a neutral object than when he was holding a weapon. However, the object had no effect in the two Black perpetrator conditions. This pattern may have emerged because witnesses have some ability to assess their accuracy. Therefore, in the White perpetrator condition, when the weapon focus effect was the strongest, they may have been able to tell that the presence of the weapon hindered their identification accuracy. On the other hand, in the Black perpetrator conditions, the weapon focus effect was weaker or nonexistent, and the witnesses may have felt that the object had no impact on their accuracy.

Threat Rating

The perpetrator carrying a weapon was rated more than twice as threatening as the perpetrator carrying a neutral object. This result is expected because in general a weapon is more threatening than a water bottle. However, the fact that there were no other significant effects indicates that the perpetrator seemed equally threatening in all three appearance conditions. This is important because it lends weight to the unusualness explanation upon which I based my hypotheses. If the weapon focus effect occurs because the weapon is threatening, then there should have been a significant interaction between the object held and the perpetrator's appearance on threat ratings. However, the lack of an interaction suggests that the

significant weapon focus effect was the product of something other than threat, in this case the unusualness of the weapon.

Potential Mediators

The results indicated that participants were aware of the stereotype regarding Black men being associated with crime, violence, and weapons. This was an important result because my hypotheses depended on witnesses being aware of the stereotype, and the results verified that they were aware in all conditions. Looking at the results for personal beliefs, the witnesses only slightly endorsed the stereotype that Black men are more likely than White men to commit a crime using a weapon. I intended to see if either of these two variables, knowledge of the stereotype or personal beliefs, mediated the relationship between object held and memory for the perpetrator in the two conditions involving the Black perpetrators. According to Baron and Kenny (1986), one of the steps to establish whether a variable mediates a relationship is that the independent variable must be correlated with the mediator. However, the manipulation of the object was not related to either knowledge of the stereotype or personal beliefs. Therefore, neither variable could mediate the relationship between the object manipulation and witnesses' memory for the perpetrator.

Although I believe that the weapon focus effect is attenuated with Black versus White perpetrators because people are aware of the stereotypes that link Black men and weapons, witnesses' personal beliefs probably do not matter in this regard. This claim that the stereotype does not need to be believed in order to affect cognition has been supported by previous research (Correll et al., 2002; Devine & Elliot, 1995); apparently, just knowing about the stereotype can activate bias completely independent of participant's personal beliefs.

Implications

The results from this study have practical implications for police investigators who are interviewing and gathering information from witnesses. The presence or absence of a weapon is something the police can take into consideration when deciding how to use witnesses' descriptions of perpetrators. The results suggest that the witnesses' schemas could play a role, along with the perpetrators' race, and these factors should be considered by the investigating officer when trying to determine how reliable he or she believes the witness to be. If a weapon was present during a crime, then police officers can be especially careful when asking about the description of the perpetrator (being cautious not to use leading questions) and in addition can request a description of the weapon (Pickel, Ross, & Truelove, 2006) to try and identify a perpetrator through that information.

Moreover, it could be strongly suggested that special training should be given to those who may encounter weapons, like police officers or bank employees, which could focus on techniques that will help enhance eyewitness descriptions. This type of training may allow witnesses not to see weapons as unusual, which will thus allow them to better pay attention to other details regarding the perpetrator's appearance. Pickel et al. (2006) found that when witnesses are given some information about the weapon focus effect before observing a crime, the effect disappears. When compared to a control condition, witnesses who received a short lecture on the weapon focus effect (how it is important to make sure to look at the perpetrator and not just the weapon) before being exposed to a crime where a weapon was present remembered approximately the same number of correct details regardless of the object held (weapon or neutral object).

Limitations and Future Research

By using White witnesses only, I believe I controlled for an issue that could have occurred with a mixed racial sample. It is unclear whether different races would perceive the robbery in the current study in different ways. For instance, there is a chance that Black witnesses would not perceive the stereotypes about Black men and weapons in the same way as White witnesses, and the difference in perception could have changed the way the video was interpreted and the accuracy of the witnesses' memories of the event. For this reason a future direction could include using Black witnesses to see if similar results are found as with White witnesses.

Another future direction I would like to see the research follow would be to utilize a target-absent line-up along with a target present one. The current study did not yield significant results for line-up accuracy, but further research to see what would emerge with a target absent line-up would be beneficial. When shown a line-up, witnesses have a tendency to want to select someone because they assume police would not show them a line-up unless they have a criminal in custody. In a target absent line-up the real perpetrator would not be shown, and therefore witnesses may have a higher tendency to select a foil, or innocent person, than when shown a target present line-up. Witnesses may select the target that looks most like the perpetrator, which would be detrimental if the perpetrator is not actually in the line-up. Due to the lack of significant results for the current study, I cannot make any definitive conclusions about how the weapon focus effect on memory for Black versus White perpetrators affects line-up selection. However, the pattern of results seemed to suggest that participants had somewhat better memories in the neutral object condition than the weapon condition, except for the Black perpetrator in stereotypical/hip-hop attire where participants seemed to have equally poor

accuracy in both object conditions. More research on how target descriptions transfer to line-up selection would help to increase the current knowledge and literature.

Lastly, future research that further manipulates the activation of witnesses' schemas, such as the attire of the perpetrator and other descriptive variables in the video, could add more literature to how stereotypes can affect eyewitness memory and the strength of the weapon focus effect. Specifically, manipulating the attire of the White perpetrator, using perpetrators of different races, manipulating the crimes to be more or less gender specific, or even manipulating the speech patterns of perpetrators could all be potential ways to activate different stereotypes and schemas that could moderate the weapon focus effect. For example, manipulating the attire of the White perpetrator such that he looks either inconsistent or consistent with a particular White male criminal schema (he wears either a business suit or "motorcycle outlaw" attire) could affect the strength of the weapon focus effect in a way similar to the appearance manipulation in the current study. Along the same idea, it would be interesting to see if the race effect I found would replicate with female perpetrators. The results would depend on whether Black women are stereotypically associated with weapons more than White women are. Going in another direction, it would be interesting to see whether speech patterns could also activate stereotypes. There is a perception that citizens living in the Southern United States are more pro-gun than those from in other regions. A White male perpetrator with a Southern drawl may be seen as less unusual when holding a weapon compared to a perpetrator without this accent.

Conclusion

This is the first study to date to systematically explore how the race of the perpetrator influences the standard weapon focus effect. I found that the weapon focus effect was weaker for the Black male perpetrator than for the White male perpetrator, probably due to research

linking Black men with violence and crime. Further, the weapon focus effect actually disappeared in the condition in which the perpetrator was a Black man in stereotypical/hip-hop attire. These results suggest that the unusualness hypothesis, rather than the threat hypothesis, played a large role in how the cognitive attention of witnesses was allocated in the various conditions.

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Table 1

Dependent Measures as a Function of Perpetrator's Appearance and Object

	Correct details	Incorrect details	Confidence in details	Threat	Stereotype knowledge	Personal beliefs	Line-up accuracy	Confidence in line-up
<u>White</u>								
Bottle	21.57** (5.73)	6.17** (2.15)	7.31 (1.88)	3.97 (1.77)	9.17 (1.6)	6.43 (1.50)	.71	7.97* (2.04)
Knife	16.40** (4.24)	9.26** (3.17)	7.14 (1.63)	8.46 (2.06)	9.11 (1.28)	6.66 (1.16)	.57	6.34* (2.14)
<u>Black/Neutral</u>								
Bottle	18.71* (4.25)	7.87* (2.13)	7.23 (1.28)	4.06 (1.71)	9.10 (1.56)	6.71 (1.58)	.74	7.29 (2.75)
Knife	16.34* (3.95)	9.31* (2.04)	7.75 (1.50)	8.13 (1.64)	8.94 (1.44)	6.59 (1.34)	.66	7.31 (1.94)
<u>Black/ Stereotypical</u>								
Bottle	21.34 (4.51)	8.66 (3.00)	7.19 (1.36)	4.16 (1.95)	9.59 (1.24)	6.72 (1.02)	.53	6.41 (1.97)
Knife	21.74 (4.92)	8.32 (2.41)	7.06 (1.79)	8.06 (1.71)	9.23 (1.43)	6.69 (1.10)	.55	6.90 (2.10)

Note. For most dependent variables, means are shown with the standard deviations displayed in parentheses. For line-up accuracy, the values reflect the proportion of correct identifications. Within perpetrator conditions, means marked with an asterisk differ at $p < .05$, and means marked with a double asterisk differ at $p < .001$.

Appendix

Questionnaire Regarding Appearance and Description of the Perpetrator

Questionnaire

In the video you just watched, a man committed a robbery. Below are some questions about him. Please answer each question as accurately as possible. If you don't know the answer to any question, you can leave it blank.

Section 1. Was the robber wearing a jacket or coat?

_____ no

_____ yes

If you said yes, please answer some additional questions about the jacket or coat. If you said no, skip to the next section.

A. What type of jacket or coat was it? For example, one type is a ski jacket.

B. What color(s) was it?

C. Can you provide any details about it? For example, did it have a hood? Did it zip up or button? Was there a graphic, lettering, or logo on it? Were there any rips visible?

Section 2. Was the robber wearing some type of shirt that you could see?

_____ no

_____ yes

If you said yes, please answer some additional questions about the shirt. If you said no, skip to the next section.

A. What type of shirt was it? For example, one type is a tank top.

B. What color(s) was it?

C. Can you provide any details about the shirt? For example, did it have long sleeves, short sleeves, or no sleeves? Did it have buttons? Did it have a collar? Was there a graphic, lettering, or logo on it? Were there any rips visible?

Section 3. Could you see the robber's pants or shorts?

_____ no
_____ yes

If you said yes, please answer some additional questions about the pants or shorts. If you said no, skip to the next section.

A. Were they long pants or shorts?

B. What type were they? For example, one type of shorts is running shorts.

C. What color(s) were they?

D. Can you provide any details about the pants or shorts? For example, did they have pockets? Was there a graphic, lettering, or logo on them? Were there any rips visible?

Section 4. Could you see the robber's footwear?

_____ no
_____ yes

If you said yes, please answer some additional questions about the footwear. If you said no, skip to the next section.

A. What type of footwear was it? For example, one type is cowboy boots.

B. What color(s) was his footwear?

C. Can you provide any details? For example, was there lettering or a logo? Did the footwear lace up or slip on?

Section 5. Was the robber wearing glasses?

_____ no

_____ yes

If you said yes, please answer some additional questions about the glasses. If you said no, skip to the next section.

A. Were they sunglasses or regular eyeglasses?

B. Can you describe the color and style of the frames?

Section 6. Was the robber wearing a hat or any kind of headgear?

_____ no

_____ yes

If you said yes, please answer some additional questions about the headgear. If you said no, skip to the next section.

A. What type was it? For example, one type of hat is a sombrero.

B. What color(s) was the headgear?

C. Can you provide any details? For example, was there a graphic, lettering, or logo?

Section 7. Was the robber wearing any jewelry, such as a wristwatch, an earring, a necklace, a bracelet, rings, or a nose ring?

_____ no

_____ yes

If you said yes, please answer some additional questions about the jewelry. If you said no, skip to the next section.

A. What type of jewelry was the robber wearing? For example, he could have been wearing a ring. If he was wearing more than one jewelry item, please list them all.

B. Can you provide any details regarding the appearance of the jewelry item(s)?

Section 8. What was the robber's race?

- ☐ white
- ☐ black
- ☐ Hispanic/Latino
- ☐ Asian
- ☐ American Indian
- ☐ biracial or other; please describe:

Section 9. How tall do you think he was? Please write down a specific height in feet and inches rather than a range.

_____ feet, _____ inches

Section 10. How would you describe his body type?

- ☐ thin
- ☐ medium build
- ☐ overweight
- ☐ muscular

Section 11. How old do you think the robber is? Please write down a specific age rather than a range.

_____ years old

Section 12. What color was the robber's hair?

- ☐ blonde
- ☐ light brown
- ☐ dark brown
- ☐ black
- ☐ gray
- ☐ red
- ☐ he was bald

Section 13. Can you describe the length and style of the robber's hair? For example, some people have straight hair that they wear in a long ponytail. If you said he was bald, just write n/a here.

Section 14. Did the robber have any facial hair or stubble?

_____ no

_____ yes

If you said yes, please describe his facial hair. For example, a man could have a handlebar moustache. If you said no, skip to the next section.

Section 15. Did the robber have any scars, birthmarks, or tattoos that you could see?

_____ no

_____ yes

If you said yes, please describe any scars, marks, or tattoos and tell where on his body they were. If you said no, skip to the next section.

Section 16. How confident are you that the information you've provided so far about the robber's appearance is accurate? Please circle one number.

1	2	3	4	5	6	7	8	9	10	11
Not at all										Completely confident

Section 17. When he first appeared, was the robber carrying any object?

_____ no

_____ yes

If you said yes, please state what the object was. If you said no, skip to the next section.

Section 18. Please answer some final questions.

A. How threatening was the robber? Please circle one number.

1	2	3	4	5	6	7	8	9	10	11
Not at all										Extremely threatening

B. Have you ever seen this man before?

_____ no

_____ yes

If you said yes, please explain where you've seen him. If you said no, skip to the next question.

C. According to racial stereotypes that exist in our society, who is more likely to commit a crime using a weapon: a white man or a black man? Please note: This question is not asking what you personally believe! It is asking what you think the stereotypes are.

1	2	3	4	5	6	7	8	9	10	11
White man is much more likely					White and black man are equally likely					Black man is much more likely

D. According to your personal beliefs, who is more likely to commit a crime using a weapon: a white man or a black man?

1	2	3	4	5	6	7	8	9	10	11
White man is much more likely					White and black man are equally likely					Black man is much more likely

Section 19. Please answer the three questions below. We are requesting this information because researchers are expected to summarize the demographic characteristics of their sample when they publish their data. Your responses will be anonymous.

A. How old are you?

B. Are you male or female?

_____ male _____ female

C. What is your race? For example, are you white, black/African-American, Latino/Latina, Asian-American, American Indian, biracial,...?

We are almost finished! Please wait quietly for the experimenter to tell you what's next. Do not complete the next section yet.

Section 20.

A. If you see the robber from the video, please circle the number of the photo that shows him. If you don't see him, circle "not pictured."

1	2	3
4	5	6

not pictured

B. How confident are you that you made an accurate choice? Please circle one number.

1	2	3	4	5	6	7	8	9	10	11
No confidence at all										Complete confidence

Please give your questionnaire to the experimenter now. Thank you!

Lineup	
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